

DIRECT TESTIMONY OF
THOMAS LYLE
ON BEHALF OF
THE SOUTHERN ENVIRONMENTAL LAW CENTER AND
THE SOUTH CAROLINA COASTAL CONSERVATION LEAGUE

DOCKET NO. 2009-261-E

1 **Q. Please state your name and business address.**

2 A. Thomas Lyle, Optimal Energy, Incorporated, 14 School Street, Bristol, VT 05443.

3 **Q. On whose behalf are you testifying?**

4 A. I am testifying on behalf of the Southern Environmental Law Center (SELC) and the
5 South Carolina Coastal Conservation League (CCL).

6 **Q. Mr. Lyle, by whom are you employed and in what capacity?**

7 A. I am employed as a Senior Consultant by Optimal Energy, Inc, a consultancy specializing
8 in energy efficiency and utility planning. In this capacity, I direct and perform analyses
9 of energy efficiency and renewable energy programs, author reports and presentations,
10 and interact with clients to serve their consulting needs.

11 **Q. Please summarize your qualifications.**

12 A. I have 17 years of experience working in the electric and telecommunications industries.
13 I have participated in several studies and/or reviews of efficiency and renewable energy
14 potential and best practices, including but not limited to studies in New York, Florida,
15 Pennsylvania, Manitoba, Iowa, Texas and Vermont. These studies have ranged from
16 macro-level assessments to detailed, bottom-up assessments evaluating thousands of
17 measures among numerous market segments. A recent example of the latter is an
18 analysis of the electric efficiency potential for the Long Island Power Authority in New
19 York.

1 Prior to joining Optimal Energy in 2008, I was a Hearing Officer with the
2 Vermont Public Service Board (“VPSB”), where I presided over adjudicatory
3 proceedings and was responsible for writing Board Orders in accordance with State law.
4 During my tenure at the VPSB, I was primarily engaged in efforts to resolve disputes
5 over public policy issues related to utility revenue requirements, rate design, transmission
6 siting, alternative resource configurations, Gas and Electric DSM programs and
7 Performance-Based Regulation. I have a B.A. in Political Science and Economics from
8 the University of New Hampshire and an M.B.A. with a concentration in Finance from
9 Southern University of New Hampshire. My resume is attached to this testimony as
10 Exhibit 1.

11 **Q. Have you previously testified before the South Carolina Public Service Commission**
12 **(“the Commission”)?**

13 A. No.

14 **Q: What is the purpose of your testimony?**

15 A: To respond to South Carolina Electric & Gas Company’s (“SCE&G” or “the Company”)
16 request for approval of its Demand Side Management (DSM) plan, including a DSM rate
17 rider and Portfolio of Energy Efficiency Programs in this docket. Specifically, I discuss:

- 18 ♦ Regulatory frameworks that foster energy efficiency best practices;
- 19 ♦ Sound operating principles that focus on customers’ needs, rather than
- 20 running programs;
- 21 ♦ Energy Efficiency Potential in SCE&G’s service area;
- 22 ♦ SCE&G’s proposed programs;
- 23 ♦ SCE&G’s evaluation plan; and
- 24 ♦ SCE&G’s proposed “opt-out” provision.

1 **Q. Could you please summarize your conclusions and recommendations?**

2 A. I have two fundamental concerns with SCE&G's proposed DSM plan. First, cumulative
3 energy savings are underestimated. This is due, in part, because of the three-year
4 program constraint and the limitations of the Company's potential study. Second, the
5 rate of annual incremental savings is too low.

6 As described in further detail below, I conclude that:

7 ♦ ICF's potential study of the Company's service area is overly conservative.

8 Additional efficiency potential in SCE&G's service area exists, possibly up to
9 19.1% of forecasted 2025 energy requirements.

10 ♦ SCE&G could easily ramp up its rate of incremental savings to 1.5% in the
11 fifth year of program implementation, *provided that*:

12 1. the Commission develops an appropriate regulatory framework
13 and approves a stable funding mechanism;

14 2. SCE&G develops and follows sound operating principles; and

15 3. SCE&G implements appropriate program design changes and
16 modifies its approach to certain market segments, both in the short-
17 and long-term, as market events warrant.

18 ♦ SCE&G has not proposed a comprehensive evaluation plan for the
19 Commission's consideration.

20 ♦ SCE&G's proposed opt-out provision is not well grounded in public policy.

21 Based on the above noted conclusions, I recommend the following:

- 1 1. The Company should conduct a long range potential study of its service
2 area and then develop longer term program goals to attain higher
3 cumulative savings in 10-20 years relative to current energy sales forecasts
4 without DSM.
- 5 2. The Company should increase its incremental savings targets in
6 accordance with the following schedule:

Year	Incremental Annual Savings target Rate
2010	0.45%
2011	0.75%
2012	0.90%
2013	1.25%
2014 -2025	1.50%

- 7 3. The Company should form a stakeholder advisory committee to advise it
8 and report to the Commission with respect to:
 - 9 a. Recommended program design changes;
 - 10 b. Targeted market sector initiatives; and
 - 11 c. Program and portfolio evaluation planning and timelines.
- 12 4. The Company should file a proposed comprehensive evaluation plan for
13 the Commission's and stakeholders' consideration.
- 14 5. The Commission should reject SCE&G's proposed opt-out provision, as
15 currently described.

Regulatory Framework

Q. Are you aware of any regulatory principles that encourage efficiency?

A. Energy efficiency is a compelling investment that can offer significant returns on a net present value basis.¹ Tapping into existing reservoirs of energy, however, requires a regulatory framework that encourages efficiency and effectiveness. Based on my review of the Company's filings, it is unclear whether SCE&G is operating under a regulatory framework that would enhance the effectiveness of its energy efficiency programs and investments. Regulatory frameworks that foster program effectiveness and lead to exemplary programs include the following elements:

- *Clarity and focus on desired outcomes*

A clear and concise public policy that specifies the program's objectives and goals is critical. Performance metrics should also be explicitly stated, both to ensure that efforts are focused on actual performance outcomes and to facilitate program evaluation. Desired outcomes primarily build upon the results of comprehensive efficiency potential studies, as discussed in greater detail below, which specify annual incremental and cumulative savings that are cost effective.

- *Consistency*

It takes time to build an effective program infrastructure, and even more time to build the relationships that help realize long-lasting and pervasive savings in the market. A program administrator who can be assured of a certain period of stability during which programs can mature will typically perform better than one that is concerned that funding

¹ McKinsey & Company, *Unlocking Energy Efficiency in the U.S. Economy*, July 2009.

1 may be quickly removed. Thus, consistency of rules and funding are critical.

2 Unfortunately, the three-year program limitation in the Company's proposal does not
3 indicate whether SCE&G would be consistently engaged in the efficiency marketplace.

4 • *Consensus*

5 Key stakeholders, including utilities, regulators, various customer classes (*e.g.*,
6 industrial, low-income, businesses), and environmental stakeholders need to work toward
7 consensus on important issues such as programs, goals, objectives and measurement
8 metrics. Although reaching consensus on such issues is difficult and time-consuming,
9 consensus building is a worthy effort. Under the current plan, it does not appear that the
10 Company intends to initiate an advisory committee to help its staff design and implement
11 customer-centric programs.

12 ***Energy Efficiency Program Operating Principles***

13 **Q. Are you aware of any operating principles that are likely to lead to the development**
14 **of effective efficiency programs?**

15 A. There are several operating principles that exemplary programs have in common, and that
16 SCE&G should adopt as it begins to ramp up its efficiency program efforts. These
17 include:

18 • *The Flexibility/Accountability Relationship*

19 If acquiring a high level of savings is the primary objective, SCE&G needs to be
20 held accountable for the achievement of savings results, and should assume the risks for
21 implementing a program that falls short of its objectives.

1 At the same time, the utility must also have sufficient flexibility to modify
2 programs, with proper notice, in response to changing market and technology conditions,
3 as well as to take advantage of new efficiency opportunities. Having a degree of
4 operating flexibility allows program administrators to ramp up savings quickly and
5 effectively.

6 While I agree with SCE&G witness Felicia Howard’s request regarding the need
7 for flexibility², the Company’s program filings fall short in fully explaining how its
8 program staff will go about making mid-course corrections, if necessary. For example,
9 will program staff regularly meet with market actors to ask for their input with respect to
10 what is or is not working? Will program staff, in consultation with a stakeholder
11 advisory committee, hold periodic reviews of program successes and challenges? The
12 answer, unfortunately, is that *we do not know*. Additionally, the Company’s filings do
13 not appear to indicate whether SCE&E will be held accountable for underachieving as a
14 result of its request for flexibility.

15 • *Robust IT Systems*

16 Efficiency program operators need to manage extensive and complex data.
17 Robust information systems containing extensive customer information are essential for
18 credibility, reliability, cross-functional data sharing and accurate reporting. Such rich
19 data systems support improved planning and the development of targeted resource
20 acquisition initiatives. Because IT systems provide information in “real time,” these data
21 systems serve as a tool to increase management effectiveness and provide feedback that

² Howard Dir. at 22.

1 supports continuous improvement. However, the Company has not demonstrated
2 whether its IT systems have the capacity to capture relevant program- and customer-
3 specific information on a real-time basis.

4 • *Customer Focus and Integration of Services*

5 In many jurisdictions, efficiency program administrators are overly focused on
6 defining and implementing “programs.” Such a focus is typically limited to a set of
7 actions targeted to a specific market sector and a defined number of end uses. The
8 problem with this “program” approach is that the program, not the customer, becomes the
9 primary focus. Shifting from the “program” approach to a more customer-focused,
10 market approach provides a strong foundation for achieving deeper and more
11 comprehensive savings. A customer-driven process begins with a careful segmentation
12 and identification of interests and motivations in each segment, and developing of
13 appropriate customer-centered value propositions for key customer segments. Effective
14 customer service is the key to sustained success and deep savings. Yet, SCE&G’s
15 program plan, as filed, appears to overlook issues, such as market barriers, that prevent
16 customers from participating.

17 • *Human Assistance vs. Financial Assistance*

18 A mix of human (technical and informational) and financial (cash and financing)
19 assistance is necessary to overcome market barriers to energy efficiency. In order to
20 achieve a high level of savings, it is sometimes more effective to allocate resources to
21 human assistance rather than to financial incentives. Customer feedback often indicates
22 that technical assistance has a significant influence on efficiency investments. Moreover,

1 human resources build strong partnerships with market allies, long-term relationships
2 with customers, and the know-how to pursue custom and niche savings opportunities.
3 Again, a detailed description of how the Company intends to engage customers and other
4 upstream market actors appears to be missing.

5 These guiding principles noted above are the hallmarks of successful, innovative
6 and effective efficiency programs. Incorporating these principles will enhance SCE&G's
7 ability to generate low-cost resources, increase customer participation rates and lower
8 program delivery costs. Based on SCE&G's filings, it does not appear that the Company
9 has sufficiently incorporated the above-noted operating principles into its DSM
10 programs.

11 *ICF's Energy Efficiency Potential Study for SCE&G*

12 **Q. Please explain the role that energy efficiency potential studies play in forming the**
13 **basis of a utility's program goals and budgets.**

14 A. Without a thorough analysis of the cost-effective resources available in a jurisdiction, it is
15 difficult to formulate appropriate regulatory policies and cogent program plans. This
16 means that in order for the program administrator to develop an effective DSM plan, they
17 must begin with an efficiency potential study to develop clear program goals and budgets.
18 Although the Company commissioned a potential study of its service area, the study is
19 limited in a number of respects. These limitations include:

- 20 ♦ Three-year time horizon rather than a 10 – 20 year outlook similar to the
21 Company's Integrated Resource Plans,

1 ♦ Low cumulative savings targets due to the restricted three-year program
2 planning horizon; and,

3 ♦ Slow pace of annual incremental savings (referred to as ramp up).

4 **Q: SCE& G’s Witness Pickles states that the anticipated electricity savings and**
5 **program expenditures represent an “aggressive” commitment to Demand Side**
6 **Management (“DSM”) based on ICF’s potential study.³ Do you agree?**

7 **A:** No, I do not. As explained in further detail below, the proposed programs represent a
8 good initial effort in the Company’s first year of operation, but more can and should be
9 done to ramp up the energy savings rate in both the short- and longer term. Before I
10 explain why I disagree with Mr. Pickles’ characterization of the Company’s commitment
11 to DSM as “aggressive,” it is important to discuss the role of energy efficiency potential
12 studies in DSM planning.

13 There are three types of efficiency “potential” that are often referred to in the
14 industry. These include:

15 ♦ **Technical Potential** is the theoretical maximum amount of energy use that
16 could be displaced by efficiency, disregarding all non-engineering constraints
17 such as cost-effectiveness and the willingness of end-users to adopt the
18 efficiency measures. It is often estimated as a “snapshot” in time assuming
19 immediate implementation of all technologically feasible energy saving
20 measures, with additional efficiency opportunities assumed as they arise from
21 activities, such as new construction.

³ Pickles Dir. at 4.

1 ♦ **Economic Potential** refers to the subset of the technical potential that is
2 economically cost-effective as compared to conventional supply-side energy
3 resources. Both Technical and Economic potential are theoretical numbers
4 that assume immediate implementation of efficiency measures, with no regard
5 for the gradual “ramping up” process of real-life programs. In addition, they
6 ignore market barriers that exist to ensuring actual implementation of
7 efficiency. Finally, they only consider the costs of efficiency measures
8 themselves, ignoring any programmatic costs (*e.g.*, marketing, analysis,
9 administration) that would be necessary to capture them.

10 ♦ **Achievable Potential** is the amount of energy use that efficiency can
11 realistically expect to displace assuming the most aggressive program scenario
12 possible (*e.g.*, providing end-users with payments for the entire incremental
13 cost of more efficiency equipment). This is often referred to as Maximum
14 Achievable Potential. Achievable potential takes into account real-world
15 barriers to convincing end-users to adopt efficiency measures, the non-
16 measure costs of delivering programs (*e.g.*, administration, marketing,
17 tracking systems, monitoring and evaluation), and the capability of programs
18 and administrators to ramp up program activity over time.

19 In short, the primary objective of potential studies is to provide a quantitative
20 assessment of the amount of energy savings that (1) technically exists, (2) may be
21 economic to acquire, and/or (3) can be realistically achieved through the implementation
22 of effective, well-supported programs and policies. In many circumstances, studies of the

1 achievable, cost-effective efficiency potential in a given jurisdiction or service area are
2 developed for the purpose of setting program goals and budgets over a set period of time.

3 **Q. ICF has determined the cost-effective savings potential for SCG&E amounts to 0.7**
4 **percent of the 2012 forecasted reference case. In your opinion, is there a high**
5 **probability that much more energy savings can be cost-effectively acquired?**

6 A. Yes, there is. While I understand ICF limited its research to the “realistic short-term
7 potential” for DSM in the Company’s service area, I nevertheless assert that establishing
8 0.7% of 2012 forecasted megawatt-hour (MWh) sales underestimates actual potential in
9 the third year of implementation and drastically understates the long-term potential.⁴ As
10 consequence, the Company’s goal is too low relative to the reservoir of untapped energy
11 savings that likely exists.

12 **Q. What is the basis for your opinion with respect to the amount of achievable energy**
13 **potential that may exist in SCE&G’s service area?**

14 A. There are two fundamental reasons why I believe much more potential for cost-effective
15 energy savings exists than ICF has reported. First, several recent potential studies in the
16 region point to much higher cumulative savings over the longer term. Second, several
17 existing programs continue to achieve much higher rates of savings despite the maturity
18 of their respective markets.

19 **Q. Please elaborate on the recent potential studies in the region indicating that there is**
20 **greater potential for cumulative energy savings than reported by SCE&G.**

21 A. There are several recent potential studies which may be of interest to the Commission.

22 The most relevant to this proceeding is the recent study of South Carolina’s
23 efficiency potential conducted by the American Council for an Energy-Efficient

⁴ Pickles Dir at 3.

Economy (“ACEEE”), which is attached as Exhibit 2.⁵ In this study, ACEEE developed a medium and high case for savings that could lead to cumulative reductions of 18 and 24 percent, respectively, relative to 2025 forecasted sales, as shown in the following table.

South Carolina		
All Sectors - Potential Cumulative Electricity Savings by 2025		
	Medium Case (%)	High Case (%)
EERS	10	16
Utilities	8	8
Total Potential	18	24

If South Carolina successfully implemented ACEEE’s various proposed programs, the state as a whole would reduce energy consumption between 17,000 and 23,000 GWh by the end of 2025.⁶ Such a commitment to efficiency would also result in a host of direct and indirect benefits to the citizens of South Carolina. Among these benefits are nearly 22,000 new and local jobs by 2025, higher wages and increases gross state product.⁷

In 2007, GDS Associates conducted an electric energy potential study for Central Electric Power Cooperative, Inc. in South Carolina. In this study, GDS determined that the maximum achievable cost-effective potential savings is about 20 percent by 2017, or 2 percent per year on average. According to GDS, achieving cumulative savings equal to 20 percent of 2017 projected loads assumes the Cooperative’s programs attain an 80% market penetration and are well-designed and well-funded.⁸

⁵ ACEEE, *South Carolina’s Energy Future: Minding its Efficiency Resources*, November, 2009, Report No. E099.

⁶ ACEEE, *South Carolina’s Energy Future: Minding its Efficiency Resources*, November, 2009, Report No. E099, at pgs 28-29.

⁷ ACEEE, *South Carolina’s Energy Future: Minding its Efficiency Resources*, November, 2009, Report No. E099, at pg viii.

⁸ GDS Associates, *Electric Energy Efficiency Potential Study for Central Electric Power Cooperative, Inc.*, Final Report (power point presentation), September 21, 2007, available at <http://www.cepci.org/assets/E2.pdf>.

1 Additionally, a 2005 ICF study of the energy efficiency potential of Georgia
2 found an achievable potential under a moderately aggressive scenario of 6% of 2010 load
3 over 5 years, or approximately 1.2% per year assuming no ramp up. This is comparable
4 with my recommendation. The study also concluded that “the potential for increased
5 energy efficiency in Georgia is large, with a wide range of associated positive impacts on
6 the economy and environment.”⁹

7 In North Carolina, GDS Associates determined in 2006 that the “Achievable Cost
8 Effective” potential in that state could amount to approximately 14% by 2017, or
9 approximately 1.4% assuming no ramp up.¹⁰

10 Finally, in September, 2008, ACEEE completed an analysis of the potential for
11 energy efficiency to meet the growing energy needs of Virginians. ACEEE found that
12 the cost-effective, cumulative energy efficiency potential in Virginia ranges between 25
13 and 28 percent by 2025 depending on customer class.¹¹ If Virginians captured all of the
14 cost- effective energy efficiency potential estimated by ACEEE by 2025, then the state’s
15 electric energy consumption would be reduced by 1.6 percent annually (excluding
16 combined heat and power), on average.

17 These studies indicate that there are ample opportunities in SCE&G’s service
18 territory to reduce energy consumption by much more than 0.7% annually after three
19 years of operation.

⁹ ICF, *Assessment of Energy Efficiency Potential in Georgia*, for the Georgia Environmental Facilities Authority, Final Report, May 2005, pp. 5-9.

¹⁰ GDS Associates, *A Study of the Feasibility of Energy Efficiency as an Eligible Resource as Part of the Renewable Portfolio Standard for the state of North Carolina*, Report for the North Carolina Utilities Commission, December, 2006.

¹¹ ACEEE, *Energizing Virginia: Efficiency First*, September, 2008, Report No. E085.

1 **Q. Are there other reasons you believe that ICF's study for SCE&G is conservative in**
2 **its estimate of cost-effective energy savings?**

3 A. Yes. ICF's potential assessment is conservative because ICF appears to have ignored
4 technology advancements, certain measures and entire sectors of the economy.

5 For example, ICF appears to have overlooked newer technologies such as LED
6 lighting, which is fast becoming cost-effective and significantly more efficient than
7 current lighting technologies. And, perhaps more relevant to South Carolina, there are
8 evolving technological developments and likely cost efficiencies in the areas of water
9 heating (heat pump water heaters and solar water heating) and cooling (ductless heat
10 pumps) that may present attractive options in high residential load areas.

11 Similarly, ICF's list of measures does not include all the potential opportunities
12 for efficiency savings, nor does ICF's study fully incorporate important synergies
13 between measures and systems that can result in very deep and cost-effective savings.
14 Building commissioning and retrocommissioning are just two examples of important
15 measures that do not appear to be included in Exhibit DKP-1 (*See Pickles testimony*).
16 These two measures alone offer substantial cost-effective savings opportunities in the
17 commercial and industrial sectors.

18 Further, ICF appears to have excluded certain key customer sectors from its
19 analysis. ICF chose to not analyze any opportunities from the agricultural sector, despite
20 the importance of the agricultural sector to South Carolina's economy. Similarly, the
21 study appears to omit wastewater treatment facilities and government facilities, in which
22 many programs have found large and cost-effective opportunities. In fact, the New York

1 Power Authority has budgeted \$1.2 billion in DSM specifically targeted at waste water
2 treatment facilities. These omissions make it highly likely that ICF's analysis understates
3 the potential for greater savings in SCE&G's service area. Had the ICF study
4 incorporated the above-noted factors (and others) in its study, SCE&G's program goals
5 would have been increased to reflect a greater percentage of cost-effective efficiency
6 resources (compared to costly supply side resources) than it currently is pursuing.

7 **Q Is there any basis for concluding that the potential for greater savings in SCE&G**
8 **territory is markedly different (on a percentage basis) from the potential for cost-**
9 **effective savings in other jurisdictions.**

10 A. No. Although the Company's service area may be unique in certain respects, there is no
11 reasonable basis to conclude that SCE&G would be unable to join the ranks of the
12 leading efficiency program administrators.

13 The potential for greater savings in SCE&G's territory is not markedly different
14 from the potential for cost-effective savings in other jurisdictions for the following
15 reasons. First, the marketplace for efficient energy consuming systems is a national
16 market. Efficient lighting systems, HVAC units, motors and other equipment that are
17 available throughout the United States are available to South Carolinians, too. The
18 opportunities to reduce electricity consumption are as ample in South Carolina as they are
19 in, for example, Iowa or Illinois.

20 Second, South Carolina's climate does not impose constraints on the potential for
21 efficiency savings and may, in fact, offer additional opportunities. Although cooling
22 savings as a percent of total cooling energy do not change dramatically with climate, the
23 total energy saved by cooling measures is greater in hotter climates. Therefore, cooling

1 measures are likely to be more cost-effective in South Carolina than in cooler climates
2 and may represent a greater share of overall savings. Additionally, several utilities in
3 hotter climates are among the top efficiency programs, including Austin Energy (TX),
4 Gainesville Regional Utilities (FL), and Nevada Power Company.

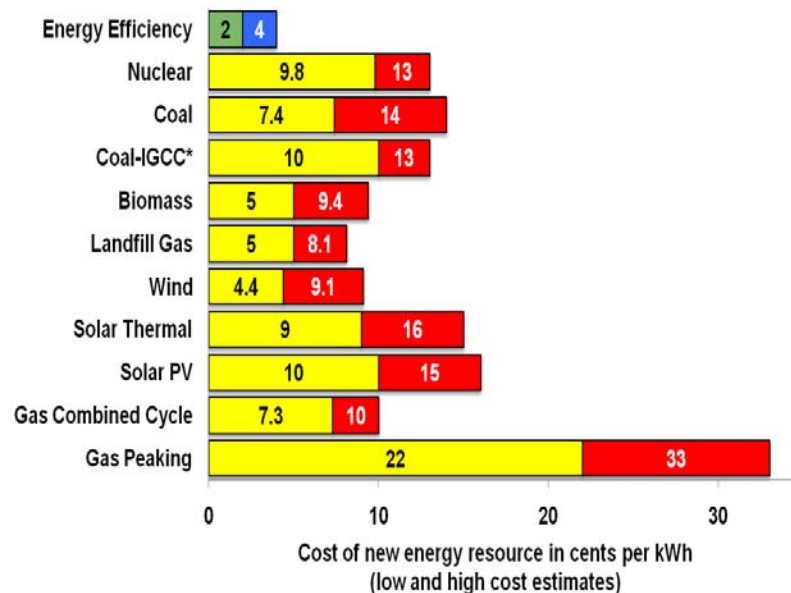
5 Third, historically low retail electric rates mean South Carolinians have had less
6 economic incentive to invest in efficiency opportunities on their own. This, combined
7 with the near-complete lack of significant DSM efforts in South Carolina, should result in
8 far more opportunities for untapped efficiency (*i.e.*, those that have not occurred naturally
9 in the marketplace) than in other jurisdictions that have been capturing substantial
10 efficiency savings for as long as two decades.

11 **Q. Even if there is significant energy efficiency potential in SCE&G's service territory,**
12 **is it true that the Company's low retail electric rates might effect the Company's**
13 **ability to acquire additional cost-effective energy resources?**

14 A. Retail rates do affect energy efficiency but not as much as one might anticipate. Even in
15 states like Washington, Iowa and Oregon with relatively low electric retail rates, energy
16 efficiency has proven to be a long-term, cost-effective energy resource. In states where
17 retail rates are low, such as South Carolina, appropriate program designs are important to
18 ensure that efficiency remains economically attractive and to encourage customer
19 participation. As will be discussed in further detail later in my testimony, program design
20 enhancements include but are not limited to increased incentives, technical services and
21 direct installation of measures. These services appear to be missing from the Company's
22 proposed program planning documents.

Q. Isn't the avoided cost of electricity the real measurement of whether efficiency is cost-effective?

A. Absolutely. Avoided costs are typically based on the cost of new supply, and are not dramatically different than in many other areas pursuing DSM. In many regions, including the South, the marginal cost of new generating capacity ranges between 5 cents/kWh (biomass) and 33 cents/kWh (gas peakers). As the below figure illustrates, the cost of efficiency, 2-4 cents/kWh, is a real bargain.¹²



To take a specific example, a recently-approved coal plant that is being built in Wise County, Virginia by Dominion has an estimated all-in cost of 9.3 cents/kWh.¹³ Add to this the avoided costs of transmission and distribution, and it is clear that the

¹² Wilson, John, *Energy Efficiency Program Impacts and Policies in the Southeast*, Southern Alliance for Clean Energy, May, 2009 and Lazard, *Levelized cost of Energy Analysis—Version 2, June 2008*.

¹³ Final Order, Case No. PUE-2007-00066, State Corporation Commission, 31 March 2008, p. 12.

1 avoided costs of traditional supply side resources will not significantly limit the potential
2 for energy efficiency in that state. These comparative cost structures—traditional supply
3 side vis-à-vis efficiency—demonstrate that efficiency is a long-term energy resource that
4 should be fully incorporated into SCE&G’s integrated resource plan on an equal basis
5 with traditional supply side resources. Based on the Company’s filings, it is not clear
6 whether efficiency planning is fully integrated into its integrated resource plans.

7 ***Cumulative and Incremental Rates of Savings***

8 **Q. You noted above that the incremental rates of savings that other established**
9 **programs have continued to achieve informed your opinion as to the savings that**
10 **could be cost-effectively acquired in the Company’s service area. Could you**
11 **explain?**

12 A. Certainly. Numerous jurisdictions have been routinely achieving energy savings
13 equivalent to 1% of annual retail electric sales or more for more than a decade, and they
14 still have plenty of efficiency opportunities to pursue.¹⁴ Many of these same jurisdictions
15 are now considering savings goals in excess of 2% per year savings. Since SCE&G does
16 not have an extensive history managing efficiency programs, and the Company has
17 significantly larger cooling loads than many leading areas in the Northeast and West
18 Coast, I would expect that achievable goals could be as high as 1.5% (or more) per year
19 within a relatively short time period. That said, ICF’s conclusions may represent a
20 reasonable *first year* savings target (*i.e.* 0.4% in year one) for SCE&G. However, if one
21 the Company’s goals is to be recognized as a leading provider of efficiency services, it
22 will need to ramp up its incremental savings targets.

¹⁴ States include, but are not limited to, CA, MA, CT and VT.

1 **Q. The 2009 ACEEE report, noted above, appears to support your conclusions that**
2 **much more efficiency potential exists in the State of South Carolina. Do you have**
3 **any additional comments relative to that study?**

4 A. Yes, the ACEEE report corroborates my opinion relative to the size of the potential
5 energy efficiency reservoir currently available in South Carolina. Assuming that the
6 ACEEE statewide assessment can serve as a proxy for the amount of efficiency potential
7 that exists in SCE&G's service area (in percentage terms), a tremendous reservoir of
8 additional savings exists but has not been acknowledged by the Company. Also, the
9 potential studies in the Southeast that I discussed earlier all indicate that average annual
10 incremental savings targets of more than 1.0 percent is doable. All that is needed to
11 acquire these resources are well-designed programs that are supported over the long term
12 with adequate resources and a faster ramp up period.

13 It is important to note, however, that ACEEE's approach to acquiring efficiency
14 represents just one set of program designs and administrative structures that could be
15 followed in the state. As proposed, the ACEEE approach appears to consist of several
16 administrative organizations funded from multiple sources. Since my testimony is
17 limited to an evaluation of the utility-run efficiency program put forward by the
18 Company in this docket, an assessment of different models of efficiency program
19 administration is beyond the scope of my testimony.

20 To achieve high rates of savings each year, it will be imperative for the SCG&E
21 to make programs easy to access. With this in mind, I have assumed for the purposes of
22 this testimony that SCG&E would be responsible for administering programs that address
23 multiple market sectors, including those that have been identified in the ACEEE report,

1 such as government buildings. Otherwise, the rate of savings suggested below would not
2 likely be achievable for SCG&E.

3 **Q. Having made the above-noted caveat, what cumulative target savings rate is realistic**
4 **in SCE&G's service territory?**

5 A. Achieving large cumulative savings relative to a forecasted reference case requires a
6 long-term view and substantial commitment.¹⁵ With a longer term view of what fully
7 integrated efficiency programs can achieve, the Company could likely attain cumulative
8 energy savings equal to 19.1% of forecasted 2025 energy sales. What may even be more
9 important to SCE&G's resource planners is that SCE&G could dramatically bend its
10 forecasted energy requirements growth curve at a lower cost than new supply-side
11 resources simply by updating its current suite of DSM programs as new measure
12 technologies come available, introducing new programs over time, targeting additional
13 markets (*i.e.* new construction, government and retrofit markets), and implementing
14 innovative strategies in existing markets. If the Company were to follow these and other
15 operating principles, as noted above, it would likely discover that its savings trajectory
16 would climb relatively steeply in the beginning years. Such was the case in Illinois,
17 where a utility discovered that there was pent up demand for efficiency amongst its C&I
18 customers; as a consequence, the program was oversubscribed within 18 months of
19 operation. The effect of an improved long-term efficiency strategy, as described
20 throughout my testimony, is shown in the following table:

¹⁵ Generally, the reference case refers to forecasted energy loads absent the DSM program.

Direct Testimony of Thomas Lyle on Behalf of Southern Environmental Law Center and the South Carolina Coastal Conservation League
 SCPSC Docket # 2009 – 261-E
 January 7, 2010

Proposed SCE & G Cumulative Energy Savings (GWh)						Improved Effort to sustain 1.50% energy efficiency rate					
Year	Reference case Energy Sales (GWh) (1)	Incremental Savings Target (%)	Incremental Savings Targets (GWh)	Cumulative Energy Savings (GWh)	Energy Sales w/Efficiency	Year	Reference case Energy Sales (GWh) (1)	Improved Incremental Target (%)	Incremental Savings Targets (GWh)	Cumulative Energy Savings (GWh)	Estimated Energy Sales w/ Efficiency (GWh)
2009	22,836	0.0%	-	-	22,836	2009	22,836	0.0%	-	-	22,836
2010	22,954	0.4%	103	103	22,851	2010	22,954	0.45%	103	103	22,851
2011	23,884	0.5%	122	225	23,659	2011	23,884	0.75%	179	282	23,602
2012	23,906	0.6%	141	366	23,540	2012	23,906	0.90%	215	497	23,409
2013	24,232	0.0%	-	366	23,866	2013	24,232	1.25%	303	800	23,432
2014	24,527	0.0%	-	366	24,161	2014	24,527	1.5%	368	1,168	23,359
2015	24,996	0.0%	-	366	24,630	2015	24,996	1.5%	375	1,543	23,453
2016	25,474	0.0%	-	366	25,108	2016	25,474	1.5%	382	1,925	23,549
2017	25,950	0.0%	-	366	25,584	2017	25,950	1.5%	389	2,314	23,636
2018	26,425	0.0%	-	366	26,059	2018	26,425	1.5%	396	2,711	23,714
2019	26,899	0.0%	-	366	26,533	2019	26,899	1.5%	403	3,114	23,785
2020	27,273	0.0%	-	366	26,907	2020	27,273	1.5%	409	3,523	23,750
2021	27,768	0.0%	-	366	27,402	2021	27,768	1.5%	417	3,940	23,828
2022	28,291	0.0%	-	263	28,028	2022	28,291	1.5%	424	4,364	23,927
2023	28,827	0.0%	-	141	28,686	2023	28,827	1.5%	432	4,797	24,030
						2024	29,300	1.5%	439	5,236	24,064
						2025	29,781	1.5%	447	5,683	24,098

Q. Could you please explain how you derived your estimate of 19.1 percent cumulative savings by 2025?

A. To reach a cumulative savings of 19.1% of forecasted 2025 energy requirements, SCE&G would need to acquire efficiency resources at a faster pace than its planned ramp-up trajectory, and then continue to make improvements in its program designs and implementation strategies to reach and sustain a 1.50% savings rate in the fifth year of implementation. The above-illustrated improved efficiency program would result in cumulative energy savings equal to 5,683 GWh, and reduce the compound annual growth rate of the Company's energy requirements by a factor of nearly 5 times.

	Cumulative EE Savings (GWh)	Cumulative % reduction of Reference Case Energy sales	Average Incremental reduction of forecasted load per year (%)	Average growth rate in Energy Req.	CAGR of Energy Req
SCE&G Proposed DSM Program	366	0.49%	0.52%	1.82%	1.64%
Improved DSM Program (16 yr avg)	5,683	19.1%	1.33%	0.34%	0.33%

Q. What is the basis of your proposed energy efficiency target?

A. Historical performance in several jurisdictions indicates that it would be reasonable to conclude that SCE&G (and South Carolina, as a whole) is capable, with a little assistance and stable funding, as noted above, to sustain an annual 1.50 % efficiency savings rate within a reasonable ramp up period.

Q. Are there other utilities that have achieved this level of efficiency?

A. Yes, even utilities that are new to DSM can ramp up programs quickly and substantially impact energy sales growth. For example, in 2007, the third year of its DSM program,

the Arizona Public Service Company achieved annual energy savings equivalent to 0.9% of retail electricity sales, after savings of 0.1% in 2005 and 0.4% in 2006). Austin Energy (Texas) increased their savings from 0.6% in 2004 to 1.1% in 2005. Burlington Electric Department (Vermont) grew their savings from just under 1% in 2004 to 2.5% in 2007. Numerous other electric companies have implemented energy efficiency portfolios that have saved over 1.0% per year, including those in Iowa and Minnesota, as shown in the following table:¹⁶

2007 Efficiency Program Savings

Utility	State	EE Spending as % of Total Revenue	Incremental MWh Savings as % of Total Retail Sales
City of Breckenridge	MN	1.3%	3.5%
Glidden Rural Electric Coop	IA	1.2%	2.6%
Burlington City of	VT	2.0%	2.5%
Pacific Gas & Electric Co	CA	3.1%	2.1%
City of Windom	MN	1.4%	2.1%
Southern California Edison Co	CA	3.6%	2.0%
Connecticut Light & Power Co	CT	2.2%	1.8%
Massachusetts Electric Co	MA	2.4%	1.6%
United Illuminating Co	CT	2.9%	1.5%
Laurens Electric Coop, Inc	SC	3.1%	1.3%
Western Massachusetts Elec Co	MA	1.6%	1.2%
Rochester Public Utilities	MN	1.3%	1.2%
Merced Irrigation District	CA	1.1%	1.1%
Fitchburg Gas & Elec Light Co	NH	1.7%	1.1%
Eugene City of	OR	3.0%	1.0%
Reedy Creek Improvement Dist	FL	0.2%	1.0%
Narragansett Electric Co	RI	1.9%	1.0%
Arizona Public Service Co	AZ	0.7%	0.9%
Snohomish County PUD No 1	WA	1.7%	0.9%
Sacramento Municipal Util Dist	CA	2.1%	0.9%
Madison Gas & Electric Co	WI	0.8%	0.9%

¹⁶ This table presents results from all utilities who saved 0.9% or greater in 2007, the latest year for which data are available. Data from EIA Form 861 database, H<http://www.eia.doe.gov/cneaf/electricity/page/eia861.html>H, accessed July 22, 2009.

1 Additionally, Efficiency Vermont (Vermont’s “energy efficiency utility”), which
2 has traditionally saved about 1% of load statewide per year, increased its savings to 2.5%
3 in 2008 after the VT Public Service Board increased Efficiency Vermont’s budgets and
4 goals in 2006.¹⁷ Moreover, in narrowly targeted programs to transmission-constrained
5 geographic areas Efficiency Vermont was able to capture 4.5 percent in 2008.¹⁸

6 **Q. Should these programs be considered anomalies?**

7 A: No, these electric companies, with the full backing of their regulatory bodies and other
8 stakeholders, have simply made a long-term commitment to achieving substantial energy
9 efficiency savings. Numerous states have recently established goals of 1% per year or
10 more, affirming that these levels are can be accomplished. New York has set a goal to
11 capture a 15% reduction in electric usage from efficiency by 2015 (approximately 1.9%
12 per year, including codes and standards). Illinois has set a goal to gradually increase
13 savings to 1% per year after 5 years and 2% per year after 10 years. Massachusetts has
14 also articulated a goal of eliminating all load growth by efficiency investment for the
15 indefinite future.

16 ***Comparative Assessment of SCE&G’s Proposed Programs***

17 In this section, I briefly discuss a few general observations about SCE&G’s
18 proposed programs, gaps in program offerings, market barriers, opportunities to improve
19 program designs, program evaluation and the proposed opt-out provision.

¹⁷ Efficiency Vermont Preliminary 2008 Annual Report, March 2009

¹⁸ Geotargeted area savings and load data provided by Efficiency Vermont.

General Observations

Q. Please briefly summarize SCG&E's proposed Demand Side Management plan.

A. The Company's proposed DSM plan consists of nine programs: 7 residential and 2 Commercial & Industrial programs. Cumulative efficiency savings are forecasted to reach 366,363 MWh's in Year 3 of the programs at a total cost of approximately \$61.2 million, as shown in the following two tables.¹⁹

Summary of Potential DSM Program Cumulative Impacts by Program						
Program	MWh			MW		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Res. Benchmarking	8,250	16,603	25,061	3.02	6.09	9.19
Res. Information Displays	1,662	3,602	5,863	0.27	0.58	0.94
Res. Audits	2,250	5,668	10,281	0.48	1.21	2.19
Res. Lighting and Appliances	24,373	51,293	80,822	3.15	6.64	10.46
Res. New HVAC and Water Heat	7,007	15,860	26,606	1.65	3.82	6.51
Res. Existing HVAC Efficiency	3,755	11,359	22,908	1.72	5.2	10.49
Res. ENERGY STAR Homes	225	681	1,373	0.08	0.24	0.48
C&I Prescriptive	36,327	78,380	126,950	3.47	7.49	12.13
C&I Custom	19,029	41,057	66,499	2.87	6.19	10.03
Total	102,878	224,503	366,363	16.71	37.46	62.42

Incremental and cumulative forecasted program budgets are as follows:

Program	Program Costs \$M		
	Year 1	Year 2	Year 3
Res. Benchmarking	0.55	0.43	0.44
Res. Information Displays	0.71	0.83	0.96
Res. Audits	2.04	3.09	4.18
Res. Lighting and Appliances	3.34	3.64	3.99
Res. New HVAC and Water Heat	2.89	3.67	4.56
Res. Existing HVAC Efficiency	1.35	2.53	3.85
Res. ENERGY STAR Homes	0.29	0.34	0.48
C&I Prescriptive	2.94	3.10	3.58
C&I Custom	2.24	2.42	2.79
Total	16.35	20.05	24.83
Cumulative 3-Yr Estimated Budget			61.23

¹⁹ F. Howard Dir. at 10.

By the end of the planning period, 2012, total energy consumption is anticipated to be roughly 1.5 percent lower relative to the forecasted reference case (*i.e.* GHW sales forecasted absent the proposed DSM program).

Proposed SCE & G Cumulative Energy Savings (GWh)					
Year	Reference case Energy Sales (GWh) (1)	Incremental Savings Target (%)	Incremental Savings Targets (GWh)	Cumulative Energy Savings (GWh)	Energy Sales w/Efficiency
2009	22,836	0.0%	-	-	22,836
2010	22,954	0.4%	103	103	22,851
2011	23,884	0.5%	122	225	23,659
2012	23,906	0.6%	141	366	23,540
GWh Growth	952			366	689
% Growth	4.15%				3.02%
Growth Relative to Forecasted 2012 reference case					1.53%

As the table above demonstrates, however, even if SCG&E attains its modest goals, the company still anticipates 3.0 percent load growth over the next three-year period. Thus, the proposed programs address only half of the estimated average annual 1.0 percent growth in the Company's energy requirements.

Q. Do you have any general observations that you would like to share with the Commission about SCE&G's proposed programs?

A. Each program description includes a brief summary and SCE&G's stated objective for offering the program. The summaries also include certain metrics, including program incentive and non-incentive costs, MWh/MW impacts, first year costs per MWh and MW acquired and participation rates. While it is always difficult to make program comparisons on a metric-by-metric basis across multiple jurisdictions, there are a few

guideposts that can, at a minimum, lead the analyst to ask additional questions about
program structures or confirm whether the program is on solid footing.

Q. Do you have any concerns about the programs based on any of these metrics?

A. Yes. The first year cost of SCE&G's programs per MWh saved indicates that SCE&G is
acquiring some of the cheapest possible savings available, and that most likely the bulk
of the savings are related to lighting measures. This is shown in the following table.

Program	Program Costs/kWh		
	Year 1	Year 2	Year 3
Res. Benchmarking	0.07	0.05	0.05
Res. Information Displays	0.43	0.43	0.42
Res. Audits	0.91	0.90	0.91
Res. Lighting and Appliances	0.14	0.14	0.14
Res. New HVAC and Water Heat	0.41	0.41	0.42
Res. Existing HVAC Efficiency	0.36	0.33	0.33
Res. ENERGY STAR Homes	1.29	0.75	0.69
C&I Prescriptive	0.08	0.07	0.07
C&I Custom	0.12	0.11	0.11
Total	0.16	0.16	0.18
Average life time costs (~10 years)	0.016		

As the table indicates, first year costs range from \$0.07/kWh to \$1.29/kWh, while
the portfolio of programs costs \$0.16/kWh—roughly \$0.02/kWh over the ten-year
average life time of a typical efficiency measure, which is at the low end of the spectrum
compared to other programs in the U.S.²⁰

Q. Low first year costs sound like a good thing. Why does this metric concern you?

A. There are several reasons. First, the exceedingly low first year costs suggest that program
participants would have likely purchased efficient products, irrespective of the customer
incentive. These participants are known as *free-riders*. SCE&G should not be paying

²⁰ Calculated in the following manner: (\$16,350,000/102,878)/1000.

1 these customers to adopt measures they would have adopted anyway, nor should the
2 company claim their savings. The idea behind utility-sponsored efficiency programs that
3 rely on ratepayer funds is to induce positive behaviors and efficient purchasing decisions.
4 However, the company's DSM plan does not demonstrate specifically how its programs
5 are designed to induce such customer responses.

6 Further, if the costs are too low, as the table above suggests, SCE&G is not
7 addressing the retrofit/early replacement market aggressively. The retrofit/early
8 replacement market, especially in the C&I sector, represents an extremely large reservoir
9 of efficiency potential. But tapping into this potential costs more to acquire—
10 approximately \$0.30/kWh in first year cost—because customers need a financial reason
11 to justify adding to or replacing working equipment.

12 As a consequence of the seemingly low incentive structures, it appears that
13 SCE&G will not likely be able to ramp up the rate of incremental savings or attain much
14 higher cumulative savings over the short and long term.

15 **Q. Do you have any concerns about the projected savings metric?**

16 A. Yes.

17 With respect to SCE&G's proposed residential benchmarking program, the
18 projected savings appear to be overly optimistic and, thus, quite uncertain. While
19 benchmarking has had some traction in the C&I sector as an informational tool, its
20 application in the residential sector is not extensive. I am not aware of any supporting
21 documentation suggesting that the level of savings represented by SCE&G could be
22 verifiable.

Program Gaps

Q. Are there important gaps in SCE&G's portfolio of programs?

A. Yes, there appear to be. To increase and sustain a 1.50% energy efficiency rate, gaps in the Company's program approaches will need to be closed in both the residential and C&I sectors. Additionally, SCE&G will need to establish methods for identifying persistent market barriers to efficiency and then develop solutions to reduce such barriers. As currently filed, there does not appear to be a comprehensive approach to addressing market barriers.

Q. Can you identify any gaps in SCE&G's residential programs?

A. Yes. The Company has not proposed a specific program for low-income residential customers, an important customer segment. Although additional incentives for low-income customers are offered, this customer segment typically requires dedicated marketing and outreach to facilitate program participation.²¹ If a dedicated program for this important customer segment, which stands to gain more from the cost savings associated with these programs, is not established, then some minimum participation targets within the programs should be established to encourage active solicitation of these customers.

Q. Does the remaining residential portfolio reasonably cover all major customer areas?

A. The residential portfolio does appear to address the modest objectives laid out in the testimonies of Felicia Howard and David Pickles, summed up as the intent to offer cost-effective DSM programs that will achieve verifiable, meaningful savings for all

²¹ See also the testimony of William Steinhurst with respect to low-income and hard-to-reach customers.

1 customers to participate in at least one program. The programs collectively do provide
2 opportunities in both new and existing buildings, addressing all of the key load factors of
3 heating, cooling, water heating, lighting and appliances. However, the breadth of
4 residential programs appears to come at a significant future cost; the programs do not
5 appear to be structured in a manner that would result in greater depth of savings at each
6 site. The average 20% savings gained in the second and third years of program offerings,
7 with budgets increasing 30% annually, is not a particularly aggressive trajectory.

8 **Q. Are there important gaps in the non-residential sector?**

9 A. SCE&G's programs also have a number of fundamental gaps in their approach to the
10 commercial and industrial sector. SCE&G is not offering initiatives targeting:

- 11 ♦ Commercial New Construction,
- 12 ♦ Agriculture, or
- 13 ♦ Government buildings

14 By not addressing these sectors, SCE&G is severely limiting the reach of its C&I
15 programs and passing over markets that have tremendous potential.

16 **Q. Are you suggesting that SCE&G develop new and specific programs that address**
17 **the commercial new construction, agricultural and government sectors?**

18 A. For the time being, establishing the proposed C&I prescriptive and custom programs as
19 “umbrella” programs designed to go after existing and new buildings is sufficient. What
20 is needed, however, are specific initiatives within the prescriptive and custom programs
21 that identify segments of the market with significant efficiency potential and design
22 specific approaches that effectively address their customers' needs. Some examples of

1 such initiatives are targeted marketing strategies, which I explain further later in my
2 testimony, and technical assessments of facilities by independent third party vendors.
3 SCE&G has not fully demonstrated how, or if, it will pursue any specific target market
4 strategy aimed at uncovering additional resources that have been discovered by ACEEE
5 in its recent potential study. An example of such a target market strategy would be an
6 initiative that effectively addresses buildings that house multiple residential apartments
7 on the upper floors and small commercial enterprises (*e.g.* restaurants) on the ground
8 floor. In this situation, it is not clear what efficiency services SCE&G will offer to
9 address the needs of this type of customer. Nor is it clear how the company will address
10 the split incentives between tenants and building owners.²² Exemplary programs in the
11 U.S. are those that comprehensively and seamlessly address their customers' energy
12 needs. Customer concerns about which program to enroll in or which forms they need to
13 complete are barriers to efficiency. By establishing solid relationships with their
14 customers, program managers can eliminate those barriers and increase the depth of
15 savings at each facility.

16 **Q. Are there specific programs that appear to be missing from the Company's filings?**

17 A. Yes. One specific program that appears to be missing from SCE&G's filings is a
18 commercial new construction initiative. SCE&G should be prepared for a resurgence in
19 new construction when the economy rebounds, and should start now to develop a
20 commercial new construction strategy in order to take advantage of efficiency
21 opportunities when construction activity picks up. New construction and renovation

²² For a description of split incentives, see Exhibit 3.

1 projects are an important “lost opportunity” market that can yield long-term cost-
2 effective savings relative to retrofit and early replacement programs. Lost opportunities,
3 as explained in further detail in Witness Steinhurst’s testimony, occur when efficiency
4 measures are not installed when it is most cost-effective to do so. If high efficiency
5 measures and practices are not introduced at the time of purchase during the design stages
6 of a building project, potential energy savings are lost.

7 **Q. Isn’t it true that the prescriptive or the custom programs apply to new construction**
8 **and renovation projects?**

9 A. Yes, this is true, but more should be done than just offering these measures. Rather than
10 simply offering customers a prescriptive rebate form for new equipment to be included in
11 a newly-constructed facility, efficiency program managers should actively engage
12 customers (and their construction team) during the new construction design phase and
13 continue to provide assistance throughout the construction period. By helping customers
14 with important decisions during the initial stages of a construction project, program
15 managers can lock in long-term, cost-effective savings through the appropriate
16 integration of efficiency measures and building design. Under the current proposed plan,
17 SCE&G’s efforts to influence decisions during the critical design phases of a new
18 construction project are very limited.

19 **Q. What is the second area of concern regarding gaps in the non-residential portfolio?**

20 A. The proposed portfolio does not adequately address efficiency opportunities in the
21 important agricultural sector. Although agricultural customers may enroll in either
22 prescriptive or custom programs, many farmers may not be motivated to participate.

1 Since farmers may consider themselves to be neither commercial nor residential
2 customers, they will likely fail to notice any of the current program offerings. Further,
3 farmers may assume that SCE&G's programs, as currently described, would not address
4 their specific needs unless the Company develops a specific marketing and
5 implementation strategy that increases awareness in the agricultural sector. An
6 agriculture program that specifically targets the farm community, including farm-related
7 vendors, through active account management, outreach initiatives and informational
8 brochures would raise awareness and result in additional cost-effective savings.

9 **Q. What is the third area of concern regarding gaps in the non-residential portfolio?**

10 A. Lastly, there appears to be no specific initiative targeting government buildings, despite
11 the fact that SCE&G's service territory includes the state capital. Although it is true that
12 government customers can also take advantage of both the prescriptive and custom
13 programs proposed by SCE&G, it is not likely they will actively participate. The
14 government sector is a unique market that requires a different approach than the approach
15 to the C&I sector. Government customers, for example, have complex procurement rules
16 and capital funding requirements that need much longer lead times. As a consequence,
17 active account management and innovative solutions such as on-bill financing and
18 performance contracting are critical to this sector.

Market Barriers

Q. SCE&G Witness Howard states (Dir. at 16) that the Company has made a concerted effort to develop a suite of broad-based programs that can also be targeted at individual market segments. Do you agree that SCE&G has developed a comprehensive approach to individual segments of South Carolina's markets?

A. No, I do not. Although efforts to develop targeted advertising campaigns and outreach programs that accentuate certain measures (*i.e.* lighting and HVAC) over others may increase consumers' interest in efficiency, such tactics by themselves rarely motivate customers to actually implement efficiency projects. To motivate consumers to implement cost-effective projects, SCE&G will need to also develop processes for identifying persistent market barriers and then design strategies and services to eliminate them. Based on the filings, it is difficult to determine whether SCE&G has developed a comprehensive plan to address market barriers that may exist in its service territory.

Q. What types of market barriers are likely to exist today in the Company's service territory and what are the potential solutions that help to eliminate such barriers to efficiency?

A. Each market presents a set of unique barriers to efficiency; some barriers are more prevalent than others. In general, however, market barriers fall into three broad categories: structural, behavioral and availability. Each of these broad categories present at least 13 additional barriers or challenges that need to be overcome if SCE&G is to increase its rate of efficiency. Exhibit 3 to this testimony presents some of the typical market barriers faced by efficiency program managers. The Company has not explained how it will identify and eliminate market barriers that impede customer participation.

Opportunities to Improve Program Designs

Q. Can you provide some examples of specific ways to address persistent market barriers and improve the portfolio of programs currently proposed by SCE&G?

A. There are many opportunities to improve program designs; too many, in fact, to recount here. To ensure programs are designed to effectively address the multitude of market sectors and barriers discussed above I recommend that the Company establish a stakeholder advisory committee. Such committees exist in many states, including Illinois, Maine, Iowa and Connecticut. Moreover, here in South Carolina, Duke Energy Carolinas has recently proposed to form a stakeholder advisory committee as part of the “Modified Save-a-Watt” approach.²³ Advisory committees that reflect a cross section of the Company’s customers --and of the state’s economy-- can provide important input, and insight, into which programs are highly likely to be successful and which are not. These customers also provide useful insight into their perceived barriers to investing in efficiency and how SCE&G could help customers overcome such barriers.

A second general area where improvements can be made is to increase the level of coordination with other electric distribution companies. For example, utilities can, and do, collaborate to negotiate so-called “upstream” discounts on lamps and fixtures. Such incentive packages have proven to be one of the more effective tactics to drive CFL sales, through both marketing and price reductions. Other examples include the use of residential energy auditors, trainers and program evaluators across multiple service territories. This results in a uniform delivery of services at lower per unit costs.

²³ Duke has filed its “Modified Save-a-Watt” proposal, the result of negotiations with the Office of Regulatory Staff, South Carolina Energy Users Committee, and environmental groups including SELC and CCL, with the Commission in Docket No. 2009-226-E.

1 A third area is to develop effective marketing strategies, as noted above, aimed at
2 high-value market sub-sets (or slices of a particular market).²⁴ Targeted program
3 initiatives are generally more successful where there is a considerable amount of energy
4 savings potential from technologies that are pervasive in the targeted market. For
5 example, bundling together a package of pre-determined measures such as refrigeration
6 equipment, efficient specialty lighting fixtures, high efficiency evaporator fans,
7 compressors and defrosting controllers for freezers into one initiative has proven to be a
8 highly effective approach for small grocery stores. This approach assumes, of course,
9 that the program administrator markets the program as a stand-alone initiative and
10 provides technical experts with in depth knowledge of the technologies and the grocery
11 business. Although SCE&G Witness Howard indicates that the Company anticipates
12 targeting individual market segments, at page 16-17 of her direct testimony, it is not clear
13 from the Company's filing how it would identify individual markets or what specific
14 tactics it would rely on to target such markets.

15 Data centers are another end use sub-sector that represents a pool of relatively
16 easy to acquire energy resources. Data centers and servers consume more than 1% of all
17 electricity produced in the United States and the usage is expected to increase to over 2%
18 within five years. Energy-efficient options now exist for data centers of all sizes,
19 including but not limited to:

²⁴ It is important to note that while segmenting the market can be effective, having a portfolio of programs with too many subsets can be problematic and administratively burdensome. Therefore, it is important to focus efficiency efforts on specific markets or end uses that have a lot of potential.

- 1 ♦ Energy-efficient servers.²⁵
- 2 ♦ Efficient uninterruptible power supply (UPS) systems.
- 3 ♦ Server power management software, available with some new systems. When
- 4 servers are not utilized, they could go into lower energy stand-by mode, while
- 5 remaining accessible for the next user.
- 6 ♦ PC power management software to hibernate or turn-off computers through
- 7 network solutions during non-business hours.
- 8 ♦ Virtual desktop infrastructure (VDI), or thin clients that use less energy than
- 9 the standard PC or laptop.
- 10 ♦ Optimized HVAC systems.
- 11 ♦ Venting outside air to cool the inside space of data centers with, for example,
- 12 economizers, air to air heat exchanger, or a dry cooler.
- 13 ♦ Reclaiming heat from larger data centers and using it to preheat supply air
- 14 going to another part of the building.

15 Here again, the success of stand-alone data center initiative is highly contingent
16 on targeting the high-tech sector with specific marketing materials and a capable delivery
17 infrastructure. Including one, two or possibly three initiatives that target high-value
18 customer or market subsets has a demonstrated success record, according to ACEEE. In
19 its 2008 “Compendium of Champions” report, a number of programs have recently added
20 initiatives that target specific customer segments that haven’t been well served in the

²⁵ Starting in late 2009, ENERGY STAR® labels will be placed on servers that have a more efficient AC to DC power supply.

1 past. As consequence, such programs have been nominated for exemplary programs,
2 elevated their savings rates considerably and improved customer satisfaction.

3 **Q. You have provided a general list of solutions to help eliminate persistent market**
4 **barriers to efficiency. Are there more that should be considered?**

5 A. As noted above, there are many more potential solutions to consider. Nevertheless,
6 experience in several jurisdictions over the past several decades have lead to the
7 development of an array of tools that can be adapted to suit the specific needs of South
8 Carolina. Among these tools are, for example:

9 ***Creating or supporting voluntary standards*** – adherence with efficiency
10 standards helps to reduce agency issues *i.e.* competing tenant vs. building owner
11 interests. Studies have found that more efficient buildings command a sizable
12 rent premium, thus providing the building owner with a financial incentive to
13 implement efficiency projects.²⁶

14 ***Financing through public-private partnerships*** —creating credit enhancements
15 with government-backed guarantees helps to reduce default risks and enhances
16 the flow of private capital into efficiency projects. This strategy helps to
17 eliminate so-called first costs of efficiency projects and increases completion rates
18 on projects that require customer contributions.

19 ***Benchmarking***—provides tools and information about the relative performance
20 of similarly-situated buildings and their energy consumption. Benchmarking
21 increases awareness and bridges the information gaps that prevent efficiency

²⁶ McKinsey & Company, “Unlocking the Energy Efficiency in the U.S. Economy”, July 2009.

1 projects from going forward. However, claiming savings from this initiative,
2 especially in the residential sector, is highly controversial as verifying such
3 savings is difficult.

4 ***Performance Contracting***—by developing policies and incentive to encourage
5 third party contractors to aggregate energy savings opportunities, program
6 administrators have been successful in addressing the hard-to-reach small
7 commercial and government sectors. By aggregating small projects under one
8 performance contract, program administrators are able to significantly reduce
9 program overhead expenses.

10 In many of the jurisdictions where Optimal has worked, our experts have
11 observed several persistent barriers to investment in energy efficiency technologies.
12 Commercial customers, for example, are not always driven by pure customer economics
13 and do not necessarily respond to compelling savings opportunities. They instead choose
14 to purchase from individuals and companies with whom they have formed relationships.
15 Overcoming this type of barrier requires program administrators to develop alternative
16 approaches to the standard prescriptive rebate model. In place of such standard
17 approaches, it is necessary to provide commercial customers with multifaceted and
18 informed solutions – both from a sales and technical standpoint. Examples of some of
19 the solutions Optimal has helped implement to effectively address the above-noted
20 market barriers in the commercial and industrial sectors include:

21 **Market Channel Coordinator Initiative:** Market Channel Coordinators
22 (MCCs) are firms or specialized staff that spearhead outreach services to a

1 specific market channels, such as retail products, building equipment, or
2 installation services. Working “upstream” from the retail customer, equipment
3 dealer, or installation contractor, MCCs promote energy and demand-saving
4 technologies, designs, equipment, and equipment installations. While
5 implementing these services, the MCCs develop critical relationships with key
6 market actors, which in turn encourage increased energy efficiency acceptance
7 and uptake by providing a streamlined and integrated link between the customers
8 and efficiency programs. MCCs may also have a MW and MWh goal.

9 **Solution Providers Initiative:** Solution Providers (SPs) are program
10 administrator staff or contractors dedicated to finding and catalyzing savings from
11 the largest customers. SPs have a significant “tool box” (e.g. financial analysis
12 tools, sales resources) with which to convince customers to participate in the
13 program. SPs are rewarded for achieving a combination of MW, MWh, and
14 comprehensiveness targets. One of Optimal’s clients will be spearheading
15 adoption of this model in 2010.

16 **Program Evaluation**

17 **Q. SCE&G Witness Howard states that the Company intends to develop monitoring**
18 **and verification (M&V) initiatives if the Commission approves its programs and**
19 **will begin implementing such initiatives as the efficiency programs are being rolled**
20 **out. Is this an appropriate strategy for the Company?**

21 **A.** No, it is not. Estimating efficiency savings is an extremely important yet challenging
22 task. In essence, program administrators are attempting to measure the avoidance of
23 energy consumption rather than its production. Yet, consumption is affected by a myriad

1 of factors, including weather, economic activity, customer growth, efficient equipment
2 saturation levels, etc. Such factors need to be accounted for in order to provide
3 stakeholders the assurances they need to determine whether customer funds are being put
4 to good use and that SCE&G's portfolio of programs are providing positive net societal
5 benefits. Due to the importance of M&V, program administrators typically propose a
6 comprehensive program evaluation plan for stakeholders to consider and to modify, if
7 appropriate. In many jurisdictions, program administrators engage in a series of
8 roundtable discussions with stakeholders to develop, to the greatest extent possible, a
9 consensus on how its programs will be evaluated and what constitutes success at the end
10 of pre-determined period. Such as proposed comprehensive evaluation plan should
11 reflect, at a minimum, the following qualities:

- 12 ♦ Consistency—if a system of rewards and penalties is part of an overall
13 efficiency program, then the rules under which program participants will be
14 operating need to be internally consistent and stable.
- 15 ♦ Simplicity—while complex evaluations may provide for more precise
16 measurements and approximations of energy savings, the cost of such
17 complexity should be considered. It is often the case that simpler evaluation
18 metrics result in greater societal benefits even if the evaluation plan is unable
19 to attribute energy savings in as great a detail as a more complex plan would
20 be able to.
- 21 ♦ Comprehensiveness—any evaluation plan must address both the inputs of an
22 efficiency program and its impacts. Effectively measuring inputs and impacts

1 is accomplished by performing two types of separate evaluation studies:

2 *process evaluations* and *impact evaluations*.

3 As SCE&G has not submitted a plan, there is no opportunity for stakeholders to
4 judge whether the public's funds will be spent appropriately. Consequently, the
5 Commission should direct the Company to submit a proposed comprehensive evaluation
6 plan within three months for a stakeholders advisory committee to consider and modify,
7 if necessary. As part of this comprehensive plan, SCE&G should detail the approach it
8 intends to follow with respect to both a process evaluation and impact evaluation, and
9 whether the company intends to initiate a process evaluation within 12 to 18 months from
10 the date of launching the programs.

11 **Q. You have just introduced two key terms that are included in evaluation plans—**
12 **process evaluation and impact evaluation. Could you please summarize the**
13 **meaning of these terms?**

14 A. Certainly.

15 ♦ *Process Evaluation* —a systematic assessment of an energy efficiency
16 program, product or service, or a component of an energy efficiency program,
17 product or service, for the purposes of identifying and recommending
18 improvements that can be made to the program to increase its effectiveness in
19 acquiring energy resources while maintaining high levels of participant
20 satisfaction and documenting program operations.²⁷

²⁷ *California Energy Efficiency Evaluation Protocols: Technical, Methodological and Reporting Requirements for Evaluation Professionals*, prepared for the California Public Utilities Commission, April, 2006, at pg 131.

1 ♦ *Impact Evaluation*—estimates net changes in electricity usage, electricity
2 demand (or usage of therms) and behavioral impacts that are expected to
3 produce changes in energy use.²⁸

4 **Opt-Out Provision**

5 **Q. SCE&G proposes to allow qualifying large C&I customers to opt out of DSM**
6 **programs and costs. Should customers be allowed to opt out of the Company's**
7 **DSM programs?**

8 A. I would not recommend approval of the proposed opt-out provision, especially since
9 SCE&G has no intention of verifying or auditing the information provided by those
10 customers electing to opt out.²⁹ Customers could easily assert that they are pursuing any
11 number of efficiency projects. These same customers, however, may also fail to
12 complete even one project in a satisfactory manner. As a consequence, the opt-out
13 provision, as currently described, may unnecessarily limit the resources available to
14 implement cost- effective efficiency projects in the large C&I sector. It is also important
15 to note that there is a substantial reservoir of efficiency opportunities at industrial
16 facilities, and companies always receive more benefits from their investments into a
17 public benefit funding pool. Given the current lack of information, there does not appear
18 to be a rational public policy basis upon which the Commission could approve the
19 proposed opt-out provision.

20 **Q: Does this conclude your testimony?**

21 A: Yes.

²⁸ *Id. at pg 19.*

²⁹ Howard dir at 25.